LETTERS TO THE EDITOR

The role of annuloplasty in mitral valve repair

To the Editor:

We read with much interest the article "Repairing the Degenerative Mitral Valve: Ten- to Fifteen-Year Follow-up," by Alvarez and associates.[1] We strongly disagree with these authors, who contend that annuloplasty is not an absolute requirement in mitral valve reconstruction. Since the physiology of the mitral anulus has been understood, the annuloplasty procedure was ever used and now it is generally considered a "milestone" in mitral valve reconstruction.

The mitral anulus is a complex structure. The complexity derives from its composition, its geometric relationship, and its pathophysiology. Only a C-shaped portion touches the underlying left ventricular wall; the remaining 25% to 30% of the anulus is intracavitary and continuous with the aortic root and the right and left fibrous trigone. Muscular representation is the basis for the geometric relationship. In fact, the mitral anulus is elliptic and changes shape during the cardiac cycle, being more circular in diastole.[2] Basically, the mitral anulus has two passive functions: (1) to be a support for the leaflet attachments and (2) to insulate electrically the atrium from the ventricle. The anatomic features of the mitral valve in degenerative diseases are represented by (1) various degrees of symmetric posterior annular dilatation, (2) excess leaflet tissue, and (3) abnormal thickening of the leaflets. The various techniques of valve repair, leaflet resection, chordal transposition, and shortening procedures are clearly supported by an annuloplasty, which is performed for four main reasons: (1) to reduce the annular dilation and mitral valve area, (2) to increase leaflet coaptation, (3) to reinforce the anulus sutures when part of the valve has been resected, and (4) to prevent future dilation of the anulus. Stabilization of the posterior anulus with a ring or other type of support seems important for the reinforcement of the posterior leaflet, and we believe it is a "must" in mitral valvuloplasty. In our large experience[3] we always used an annuloplasty, and no patients had left ventricular outflow tract obstruction as a result of systolic anterior motion of the mitral valve.

Concerning a "foreign body," as the authors define annular devices, I would like to propose our type of annuloplasty technique performed with the use of autologous pericardium. A posterior pericardial annuloplasty reduces the annular size but allows for it to continuously change during the cardiac cycle. In our series there has not been a significant increase of endocarditis and thromboembolic episodes, and long-term results are encouraging. Because we are presently working with this type of annuloplasty, we are very interested to hear the basis for the authors' conclusion about the possibility to restore annular function without any surgical procedures on the anulus. The aim of this letter is not to criticize but to express our appreciation for the endeavors of the authors in mitral valve reconstruction, which is not an easy task.

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Reply to the Editor:

My colleagues and I appreciate the comments of Drs. Scrofani and Santoli regarding our article and accept their appreciation of our endeavors at mitral valve repair. We wholeheartedly welcome their constructive criticism.

However, I believe that we are closer to complete agreement with them than to strong disagreement. At no stage in our article do we state than an annuloplasty is not an absolute prerequisite to achieve a successful and durable repair. What we do state is that an annuloplasty *ring* is not at absolute prerequisite. This statement is clearly enunciated throughout the article. Just as Drs. Scrofani and Santoli state that "stabilization of the posterior anulus with a ring or *other type of support* [my italics] . . . is a must for mitral valvuloplasty," so too do we clearly enunciate this on page 245, paragraph 4 of the *Discussion:* "of the many factors contributing to successful repair, we believe the key to be stabilization of the posterior anulus by a localized annuloplasty to relieve any tension on the reconstructed leaflets."

Unlike Drs. Scrofani and Santoli, I would not call our series of 155 patients a large experience, but it does have a long follow-up, with 23 patients at 10 years. In their series of 113 cases, freedom from reoperation at 5 years is 89.7%, no confidence intervals are given, and the number of patients at risk is 22; in our series, freedom from reoperation at 10 years is 90.3% ± 4%, with 23 patients at risk.

If I may disabuse Drs. Scrofani and Santoli about our technique of restoring "annular function without any

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surgical procedure on the anulus," Fig. 2, *B* in our article clearly displays and states that 60% to 70% of the posterior mitral leaflet is excised, in essence, all of the central scallop of the posterior mitral leaflet. As such, about one third of the anulus of the posterior mitral leaflet is left without any leaflet attachments. By apposing the annular margins of the remaining leaflets, we reduce (plicate) the posterior anulus by at least 30%. As we state in the *Discussion,* "the placement of three to four interrupted, interlocking mattress sutures achieves this goal." The suture material is 2-0 polyester.

In essence, in our series this set of suture annuloplasties was sufficient to stabilize the posterior anulus. According to the article by Scrofani and associates,[1] they too "plicated with interrupted stitches (2-0 polyester)" the anulus "beneath the excised or transposed portion of the mural leaflet." What they do in addition is use the pericardial strip as a belt to further reinforce the basal mural suture plication.

I believe we do not strongly disagree with Drs. Scrofani and Santoli. Rather, we believe a localized series of inexpensive suture annuloplasties is sufficient in a vast majority of cases to produce a freedom from reoperation rate of 90% at 10 years in this retrospective, hence nonrandomized series of indeterminate selectivity (as all such series are wont to be). Drs. Scrofani and Santoli believe in their innovatively clever version of an annuloplasty ring, to be added to other believers of the half dozen or more other annuloplasty rings available on the market.

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Pedicled pericardial flaps

To the Editor:

I congratulate Khoury and associates for the excellent results obtained with the Laennec group in Paris using pedicled pericardial flaps, a technique that we started together in the Bichat Hospital Paris in 1985.

I developed and used the flaps in eight patients (aged 6 months to 8 years) with tetralogy of Fallot for iatrogenic or congenital stenosis of their pulmonary artery branches (left pulmonary artery in four, right pulmonary artery in one, and bifurcation in four). The follow-up is now between 5 and 10 years, with superb results except for one failure resulting from technical difficulties during the operation.

Between July 1989 and July 1992, I also used pedicled pericardial tubes in 12 patients with tricuspid atresia to bridge the inferior vena cava to the main pulmonary artery for bicaval to pulmonary artery connections. The mean age of the patients was 4 ± 2.8 years and mean body weight was 10.5 ± 4.9 kg. The follow-up is 4 to 7 years, with stable clinical results and enlarged conduits in the three patients who have had angiograms.

We stopped using the technique because our hospital no longer treats pediatric patients, so I can only show gratitude toward Wassim Khoury and Francine Leca for taking an interest in the technique and proving its results.

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[Response declined]

Transmanubrial approach to the thoracic inlet

To the Editor:

We fully agree with Nazari's opinion[1] about the disadvantages of clavicle resection in the transcervical approach to apical chest tumors. Anyone who is familiar with the transclavicular approach has experience with the deformity (Fig. 1) and discomfort caused by (1) the shortening of the acromiosternal distance, (2) the paradoxic and painful movement of the free distal part of the clavicle, (3) the instability of the scapular girdle, of which the only point of attachment is the sternoclavicular joint, and (4) the disinsertion of the sternocleidomastoid and the pectoralis major muscles.

Our approach to avoid these deformities is quite different, for three reasons.

1. In our experience, the reinstallation of the disarticulated clavicle leads either to luxation of the sternoclavicular joint when fixed only with metallic stitches, because of the strength of the scapular movements, or to an arthrodesis, with important limitation of scapular mobility, when fixed with a screw or Sherman's plate.

2. The sternomastoid muscle is the major component of cervical spine stability. Its disinsertion, even after careful reconstruction, leads in all cases to a progressive cervical scoliosis.

3. The radical treatment of lung cancers, including apical tumors, must respect oncologic principles. At the very least an upper lobectomy, associated with a medias-